Prepared for:
Tennessee Gas Pipeline Company
Houston, Texas

Wetland Delineation Report – 2008
Concord Expansion Project
Pelham and Concord, New Hampshire

ENSR Corporation
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Contents

Appendices

1.0 Introduction

Tennessee Gas Pipeline Company ("Tennessee") is filing with the Federal Energy Regulatory Commission ("FERC" or "Commission") an Application for a Certificate of Public Convenience and Necessity for the Concord Expansion Project in Hillsborough and Merrimack Counties, New Hampshire to deliver 30,000 dekatherms per day ("Dth/d") of firm natural gas transportation service to Energy North Natural Gas, Inc. d/b/a KeySpan Energy Delivery New England ("KeySpan"). Tennessee's proposed Concord Expansion Project ("the Project") involves the construction of a 6,130 horsepower ("hp") compressor station in Pelham, New Hampshire and upgrade of the existing Laconia Meter Station in Laconia, New Hampshire. The Laconia Meter Station piping will be replaced with larger diameter piping sized to handle the incremental 30,000 Dth/d of capacity. The anticipated in-service date is November 2009.

This report presents the results of the wetland field surveys at the Pelham Compressor Station site in Pelham, New Hampshire and the Laconia Meter Station site in Concord, New Hampshire. Section 2.0 identifies the Project locations and summarizes the proposed construction activities and land requirements at each site. Section 3.0 describes methodologies ENSR followed to complete the wetland surveys and document wetland boundaries. Section 4.0 provides a brief description of the delineated resource areas, based on the field surveys and review of existing baseline information complied from United States Geologic Survey ("USGS") topographic maps, National Wetlands Inventory ("NWI") maps, and USDA - Natural Resources Conservation Service ("NRCS", formerly the Soil Conservation Service) soil maps. The findings of this report are summarized in Section 5.0. Section 6.0 cites documents used in the preparation of this report.

This report has been prepared for the benefit of federal, state, and local agencies involved in the NEPA review and permitting phase of the Concord Expansion Project. Emphasis is placed on identifying and describing United States Army Corps of Engineers ("ACOE") jurisdictional wetlands and ACOE waterbodies. State and local wetland jurisdictional issues are also reviewed.

2.0 Proposed Activities

The Project locations, proposed facilities, and land requirements are discussed below. Accompanying this report are site locus figures in Appendix A and aerial-based wetland plans in Appendix B. The wetland plans show the general layout of the proposed facilities and temporary workspace relative to the delineated wetland and watercourse boundaries. Both figures and plans are Non-Internet Public per FERC's document control requirements.

The proposed aboveground facilities associated with the Concord Expansion Project are listed in Table 2.0-1. These facilities are conceptual in nature and are subject to final design and FERC approval.

TABLE 2.0-1
PROPOSED ABOVEGROUND FACILITIES
OF THE CONCORD EXPANSION PROJECT

Proposed Facility	New / Modified	Approximate Milepost[a]	Town	County, State
Compressor Station 270B	New	9.51 – 9.56	Pelham	Hillsborough, New Hampshire
Laconia Meter Station	Modified	15.04 – 15.13	Concord	Merrimack, New Hampshire

[a] Milepost location is based upon the existing TGP Line 200

2.1 Aboveground Facilities

Tennessee proposes to design and operate the proposed compressor station using the same or similar techniques that have been applied to successfully design, construct, and operate its existing compressor stations in New England. Key elements of the Compressor Station design would be the installation of gas turbines incorporating Best Available Control Technology ("BACT") and the construction of a station that will be aesthetically compatible with the existing surroundings.

2.1.1 Compressor Station 270B1 – Pelham, NH

Compressor Station 270B will be installed to increase the natural gas throughput of the existing downstream pipeline by boosting the pressure of the natural gas up to the current MAOP of 750 pounds per square inch gauge ("psig"). The increase of pipeline gas pressure will be accomplished through the installation of one, 6,130 hp turbine driven centrifugal compressor (Solar Centaur 50L) unit. The turbo-compressor will be fueled by natural gas and equipped with a "lean pre-mix" dry low nitrogen oxide ("NOx") combustors to limit NOx, carbon monoxide ("CO") and particulate matter ("PM") emissions to less than BACT levels. The associated facilities include a unit control building, station maintenance / control building, emergency electrical power generator, a domestic gas building plus parking and access areas.

2.1.2 Laconia Meter Station – Concord, NH

Tennessee proposes to modify the piping at its existing Laconia Meter Station located in Concord, Merrimack County, New Hampshire to accommodate the additional gas capacity generated by the proposed Compressor Station 270B1. Tennessee proposes to replace a total of approximately 60 feet of existing six inch and four inch pipe from Line 273C-100 to the Concord Meter Station at the Laconia Measuring facility with 12-inch pipe. Additionally, piping will be installed between Lines 273C-100 and Line to serve as a tie-over line to ensure continued service in the event of outages on the primary Line. All of the piping shall be located within the existing, fenced meter station compound. There will be no permanent expansion of the facility footprint.

2.1.3 Temporary Facilities

2.1.3.1 Equipment Storage Yards and Contractor Yards

During construction of the proposed Compressor Station 270B, Tennessee anticipates the use of the site property for both the contractor yard and storage of materials.

2.1.3.2 Access Roads

Access roads are required for construction so the contractor may move personnel, equipment and material to the compressor station site. Tennessee proposes to construct a new access road, approximately 1,000 feet in length, from Industrial Park Road along the existing ROW to the Compressor site. No temporary access roads are needed or proposed.

3.0 Methodology

3.1 Survey Areas

Tennessee contracted ENSR to delineate wetlands and watercourses at the Project locations for the Concord Expansion Project. The surveys areas are reviewed below.

3.1.1 Pelham, NH

ENSR performed field surveys for wetlands and waterbodies on the proposed Compressor Station 270B1 property consisting of an 11.6-acre parcel owned by Tennessee adjacent to an existing industrial park in the town of Pelham, New Hampshire. Construction on the property will also include a new 1,000 foot long access road.

3.1.2 Concord, NH

ENSR performed field surveys for wetlands and waterbodies on the existing Laconia Meter Station property consisting of a one half acre parcel owned by Tennessee in Concord, New Hampshire.

3.2 Federal and State Wetland/Watercourse Jurisdictions

3.2.1 Section 404 – Clean Water Act

Wetlands, springs, and other waters of the U.S. are regulated under Section 404 of the Clean Water Act and through a permit process administrated by the ACOE. Federally jurisdictional wetlands include interstate wetlands, wetlands adjacent to waters of the U.S., and intrastate wetlands whose degradation or destruction could affect interstate or foreign commerce as per the application of 33 CFR 328. According to the 1987 Wetland Delineation Manual (ACOE 1987), areas must exhibit three distinct characteristics to be considered wetlands:

1. The prevalent vegetation must consist of plants adapted to life in hydric soil conditions. These species, due to morphological, physiological, and/or reproductive adaptations, can and do persist in anaerobic soil conditions;

2. Soils in wetlands must be classified as hydric or they must possess characteristics that are associated with reducing soil conditions; and

3. The area must be inundated either permanently or periodically at mean water depths less than 6.6 feet (2 meters) or the soil saturated at the surface for some time during the growing season of the prevalent vegetation.

It is ENSR's understanding that per the U.S. Supreme Court ruling in *Solid Waste Agency of Northern Cook County V. Army Corps of Engineers*, the ACOE can make a determination that a wetland is non-jurisdictional if it finds that the area does not support migratory bird or endangered species habitat and does not connect to an intrastate water. This determination is made through a process initiated by the Applicant. No such determination has been sought by Tennessee for the wetland identified on the Compressor Station 270B1 site.

3.2.2 New Hampshire Freshwater Wetlands Regulations

Pursuant to RSA 482-A the New Hampshire Department of Environmental Services ("NHDES") regulates all work in freshwater wetlands, lakes, ponds, rivers and streams. The New Hampshire Wetlands Program delineates wetlands according to the *1987 Federal Manual for Indentifying Jurisdictional Weltands and the Field Indicators for Identifying Hydric Soils in New England*. These manuals use the combination of the presence of three criteria; hydrology, hydric soil and vegetation. Under RSA 482-A, any municipality may undertake to designate, map and document prime wetlands lying within its boundaries. Prime wetlands are areas with high value functions which are mapped by the town and approved by the NHDES. Prime wetlands have additional protection under RSA 482-A, which states "no permit shall be issued unless evidence is provided that there shall be no net loss of values to those areas". The Compressor Station 270B1 is not located within or adjacent to any prime wetlands designated by the Town of Pelham.

The New Hampshire state statutes are implemented by the Town of Pelham Zoning Ordinance (as amended March 1994). Under Article II, definitions, a wetland is "an area that is inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal conditions, does support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include, but are not limited to, swamps, marshes, bogs, and similar areas."

For activities under local jurisdiction, the Pelham regulations cover wetland areas of 2,000 square feet or more in size, or of any size if contiguous to surface waters such as lakes, ponds and streams, and all areas within fifty feet of the edge of any wetlands, perennial stream or surface water body. Pursuant to the Pelham regulations, "Wetlands shall be delineated by either a certified soil scientist or a professional wetland scientist according to the Corps of Engineers Wetlands Delineation Manual, 1987, and the Regional Field Indicators for Identifying Hydric Soils in New England, 1995."

3.3 Wetland Delineation Procedures

The wetland delineation methodology outlined in the ACOE Wetlands Delineation Manual (Environmental Laboratory 1987) was used to identify and delineate wetlands at the subject properties identified in Section 3.1. A review of existing mapping was conducted prior to the execution of field surveys.

3.3.1 Resource Information Review

Prior to conducting the field surveys, ENSR reviewed the following background information to determine the potential extent of wetlands in the survey area:

3.3.1.1 Pelham, NH

1. USGS topographic quadrangles (Windham and Nashua North, NH)
2. National Wetland Inventory Maps (Windham and Nashua North, NH)
3. Natural Resource Conservation Service – Web Soil Survey Data for Hillsborough County, NH; Eastern Part and Rockingham County, NH
4. Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Map (Community Panel 330100 0001 B, Effective Date March 14, 1880)

3.3.2 Field Survey

ENSR performed field surveys on the Project site in July of 2007 according to the ACOE Wetlands Delineation Manual (Environmental Laboratory 1987), New Hampshire Freshwater Wetlands Regulations and the Pelham Zoning Ordinance. Vegetation, soils, and hydrology data was assessed during the field surveys to determine whether the three wetland criteria were satisfied within each suspect wetland area. Wetlands were classified as palustrine forested ("PFO"), palustrine scrub-shrub ("PSS"), or palustrine emergent ("PEM") in accordance with Cowardin et al. (1979). ENSR used to the top of bank to demarcate the limits of a watercourse, when no wetlands were adjacent to the channel.

The specific methods for characterizing and evaluating vegetation, hydrology, and soils for a wetland determination were performed as follows:

Vegetation: Species abundance in both upland and wetland communities were visually estimated. Dominant trees and shrubs/saplings were recorded within a 30-foot and 15-foot radius, respectively, of the documentation plot. Dominant herbaceous vegetation was recorded within a 5-foot radius of the plot. ENSR identified plant species using appropriate botanical reference material for the region. The indicator status of each species was identified using the *National List of Plant Species That Occur in Wetlands, Region1-Northeast* (Resource Management Group 1999). Hydrophytic vegetation was determined to be present where greater than 50 percent of the dominant species were classified as facultative ("FAC+" or "FAC"), facultative wetland ("FACW"), or obligate ("OBL").

Soils: For each documentation plot, ENSR characterized the soil profile to determine the area's hydric soil status. Borings to observe the profile were taken with a hand-held auger and were taken to depths necessary to accurately determine a soil's hydric status (typically 18-24 inches deep). The information collected for each soil profile included each soil horizon's depth, texture, color, and the presence or absence of redoximorphic features (mottles). Colors of the soil matrix and mottles were identified using the Munsell Soil Color Charts. ENSR based all hydric soil determinations on criteria established in the ACOE Wetlands Delineation Manual (Environmental Laboratory 1987), along with *Field Indicators of Hydric Soils in the United States* (NRCS 2006) and *Field Indicators for Identifying Hydric Soils in New England* (NEIWPCC 2004). Additionally, ENSR also noted the presence of any saturation and/or standing water encountered during the soil profile description.

Hydrology: Site hydrology was evaluated during field surveys by noting whether the soil at the surface was inundated or saturated. If the ground surface was dry, the depth to freestanding groundwater or saturated soil was measured and the presence or absence of other field evidence of wetland hydrology (e.g., drift lines, water-stained leaves, etc.) was noted. The wetland hydrology criterion was met if one or more primary or two or more secondary field indicators were present (Environmental Laboratory 1987).

Wetland and watercourse flag positions and data point locations were field located by Tennessee's survey engineering contractor at the Pelham site during the spring/summer of 2007, and at the Laconia site in January of 2008. Plotting of the wetland boundaries was reviewed and confirmed by ENSR. The aerial-based wetland plans in Attachment B show the locations of the delineated resources relative to the proposed limits of the Concord Expansion Project.

Documentation of the wetland boundaries was taken at certain locations. This information was used to fill out wetland determination field datasheets included in Appendix C.

4.0 Survey Results

The results of the background information review and the field surveys are presented below. Appendix B contains aerial mapping that shows the delineated features in relation to the proposed project areas.

4.1 Compressor Station 270B1

ENSR wetland scientists conducted biological field surveys of the Project area in July of 2007, to delineate wetlands, waterbodies, or permanently flooded bodies of water at the Project site. The Project site is located north of Industrial Park Drive and is bordered on the north by Beaver Brook. The parcel consists of upland forest, with a gentle slope toward a wetland associated with the bank of Beaver Brook. The upland forest type on the parcel consists of Appalachian Oak-Pine forest system, dominated by Eastern white pine (*Pinus strobus),* white oak (*Quercus alba*), scrub oak (*Quercus ilicifolia*), red maple (*Acer rubrum*), and Eastern hemlock (*Tsuga Canadensis*).

ENSR delineated one wetland complex on the 11.6 acre site. Wetland 1 is a wetland complex consisting of PFO and PSS components along the north eastern property boundary line associated with the perennial channel of Beaver Brook. The limits of Wetland 1 are delineated with pink flagging labeled WF A-1 through WF A-52. The PFO component of the Wetland 1 was dominated by red maple, American elm (*Ulmus americana*), and Eastern white pine. Shrubs and saplings present included black cherry (*prunus serotina*), red oak (*Quercus rubra*) and speckled alder (*Alnus rugosa*). Ferns present in the herbaceous layer included cinnamon fern (*Osmunda cinnamomea*), marsh fern (*Thelpteris simulata*), and sensitive fern (*Onoclea sensibilis*). The preliminary design of the Compressor Station 270B1 has sited all proposed workspace areas outside of delineated wetland resources as well as the 50-foot buffer bordering these wetlands. The proposed Project does not involve crossing of Beaver Brook or any other waterbody.

4.2 Laconia Meter Station

ENSR wetland scientists conducted biological field surveys of the Project area on January 10, 2008, to delineate wetlands, waterbodies, or permanently flooded bodies of water at the Project site. The Laconia Meter Station is located on the northeast side of Broken Bridge Road in Concord, NH. The area surrounding the facility consists of maintained lawn with a vegetated fringe of Eastern white pine and black cherry. East of the existing meter station, the property steeply transitions to an extensive bordering vegetated wetland system comprised of red maple, Eastern hemlock, and Eastern white pine. This wetland system continues to the southeast toward the Suncook River. ENSR delineated two wetlands (Wetland A and Wetland B) along the Project area, which consisted predominantly of PEM and PFO wetland cover types.

Wetland A is located east of the existing meter station and consists of both PEM and PFO cover types. It includes a small section of the maintained ROW and later transitions southeast to the Suncook River. The limits of Wetland A are delineated with pink flags labeled A-1 to A-12. The PFO wetland located to the east of the meter station is comprised of red maple, Eastern white pine, and Eastern hemlock. The PEM portion of the wetland system is vegetated with sensitive fern, skunk cabbage (*Symplocarpus foetidus*), and Northern arrowwood (*Viburnum recognitum*).

Wetland B is located south of the existing meter station, directly south of Broken Bridge Road. This wetland consists of PFO cover, and is dominantly vegetated with red maple, grey birch (*Betula papyrifera*), Eastern white pine, and Northern arrowwood. The limits of Wetland B are delineated in the field with pink flags labeled P-1 to B-5.

The preliminary design of the Laconia Meter Station modifications has sited all proposed workspace areas outside of delineated wetland resources as well as the 50-foot buffer bordering these wetlands. The proposed Project does not involve crossing of any waterbody.

5.0 Summary and Conclusion

In July of 2007, ENSR delineated wetlands and watercourses at the proposed Concord Expansion Project site in Pelham and Concord, New Hampshire. Tennessee is proposing to construct a new compressor station in Pelham, NH. The Project site consists of existing permanent easement / fee property, proposed temporary workspace, proposed additional temporary workspace, a new compressor station and new access road. Tennessee is proposing modifications to the existing Laconia Meter Station in Concord, NH. The Project site consists of the existing meter station property.

ENSR made wetland determinations in accordance with the 1987 ACOE Wetlands Delineation Manual. No impacts to wetlands and watercourses are proposed for construction of the Project as currently designed and will not require permitting under the Federal and State regulatory frameworks, including Section 404 of the federal Clean Water Act administered by the United States Army Corps of Engineers, Section 401 of the federal Clean Water Act administered by the state of New Hampshire (Water Quality Certification), and the New Hampshire Freshwater Wetlands Regulations (RSA 482-A).

As previously stated, the Project will not include temporary impacts to wetlands and watercourses in the vicinity of the Project site, the proposed project will be located outside of the delineated wetland resources and any impacts to the wetland from disturbed soils should be mitigated through implementation of the Federal Energy Regulatory Commission's Upland Erosion Control, Revegetation, and Maintenance Plan.

6.0 References

ACOE. 1987. Wetlands Delineation Manual, Environmental Laboratory, Washington, Washington D.C.

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. United States Fish and Wildlife Service Biological Report 79/31, Washington D.C.

FEMA. 1980. Flood Insurance Rate Map for the Town of Pelham, Hillsborough County, New Hampshire. Community Panel 330100 0001 B, Effective Date March 14, 1980.

New England Interstate Water Pollution Control Commission ("NEIWPCC"). 2004. Field Indicators for Identifying Hydric Soils in New England. Version 3 – April 2004. 86pp.

Resource Management Group. 1999. *National List of Plant Species That Occur In Wetlands, Region 1-Northeast.*

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey [Online WWW]. Available URL: http://websoilsurvey.nrcs.usda.gov/ [accessed 6 July 2007].

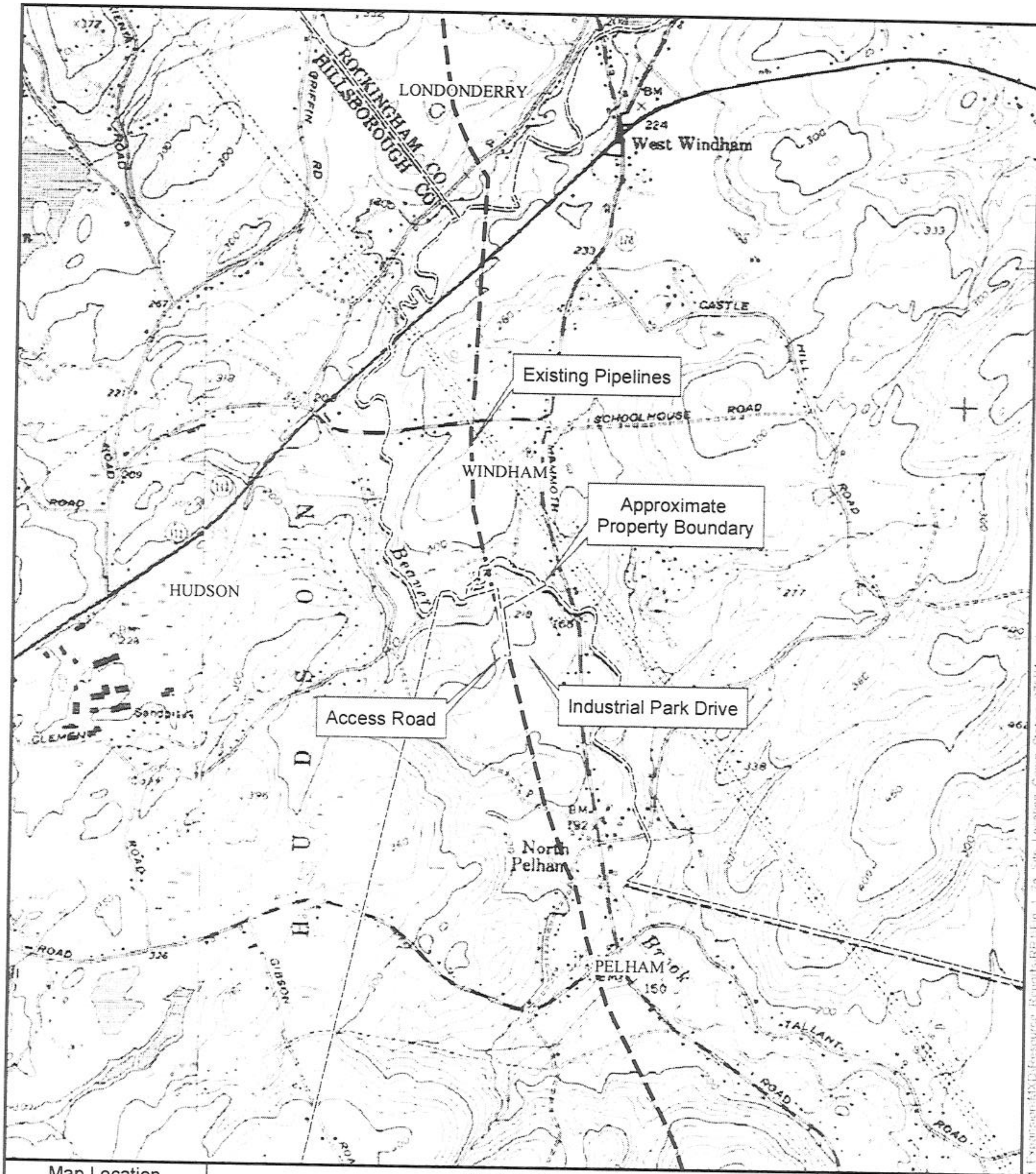
USFWS. 1983. National Wetlands Inventory Maps. Quadrangle Windham and Nashua North, N.H. Scale 1:24,000.

United States Department of Agriculture, Natural Resources Conservation Service. 2006. *Field Indicators of Hydric Soils in the United States*, Version 6.0. G.W. Hurt and L.M. Vasilas (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.

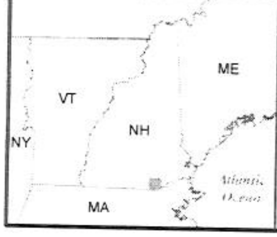
USGS. Topographic Quadrangle Windham and Nashua North, N.H; Scale 1:24,000.

APPENDIX A

FIGURES



Map Location



Site Location
Concord Expansion Project
Compressor Station 270B1
Pelham, New Hampshire

Legend

- Proposed Compressor Station Property Boundary
- Existing Pipelines
- Town Boundary

Scale: 1:24,000

0 500 1,000 2,000 3,000 Feet

Map Projection: State Plane NH, NAD83, Feet.
Image Source: USGS Topo Quad Windham and Nashua North NH.

Tennessee Gas Pipeline
an El Paso company

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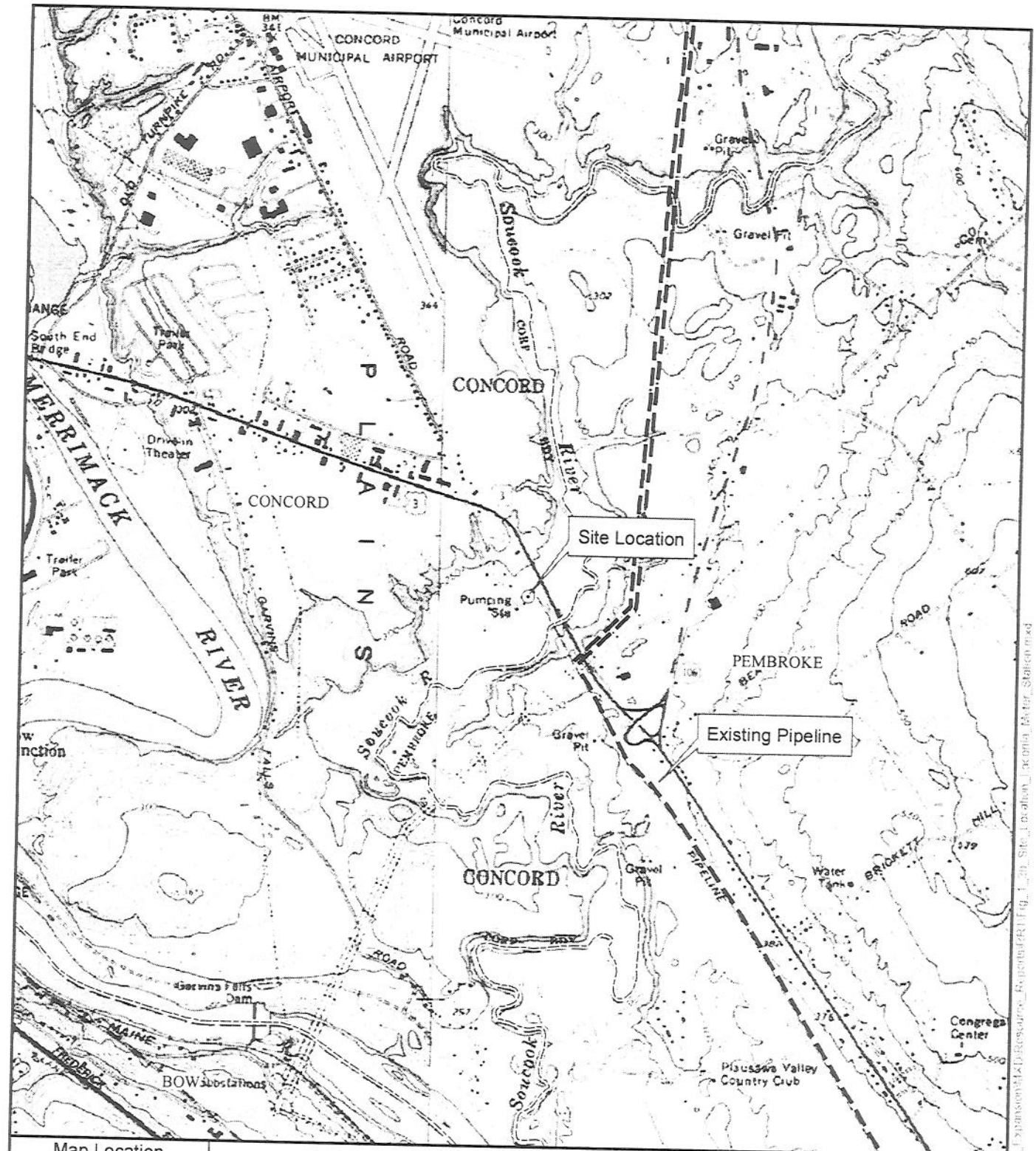
Figure 1-2a

February 2008

Project: 02521-073



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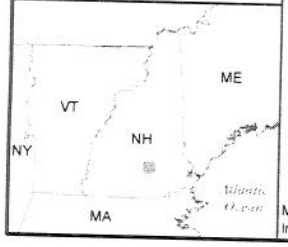

Site Location
Concord Expansion Project
Laconia Meter Station
Concord, New Hampshire

Legend

Laconia Meter Station
Town Boundary
Existing Pipelines

Map Projection: State Plane NH, NAD83, Feet
Image Source: USGS Topo Quad Concord, Suncook

Scale: 1:24,000
0 500 1,000 2,000 3,000 Feet

Tennessee Gas Pipeline
a El Paso company

INSR [illegible]

Figure 1-2b
February 2008
Project: 02521-073

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APPENDIX B

WETLAND DETERMINATION FIELD DATASHEETS

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Applicant / Owner: **Tennessee Gas Pipeline Company (Tennessee)**		Plot ID: **Wetland A**	
Project / Site: **Concord Expansion Project – Concord Compressor Station**		Transect ID: **WF A-42**	
County: **Hillsborough**	State: **New Hampshire**	Community ID: **Upland**	
Investigator: **John Zimmer (ENSR)**		Date of Delineation: **07/11/07**	
Do normal circumstances exist onsite?		Yes ☒	No ☐
Is the site significantly disturbed (Atypical situation)?		Yes ☐	No ☒
Is the site a potential problem area?		Yes ☐	No ☒

Check all that apply:

- ☐ Vegetation alone presumed adequate to delineate BVW: fill out Section I only
- ☒ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
- ☐ Method other than dominance test used (attach additional information)

Section I. Vegetation

Strata	Plant Species	Scientific Name	Percent Cover	Percent Dominance	Dominant Plant?	Wetland Indictor Category*
Trees	White Pine	*Pinus strobus*	63	52	Y	FACU
	White Oak	*Quercus alba*	38	31	Y	FACU-
	Red Maple	*Acer rubrum*	20.5	17	N	
Sapling	White Pine	*Pinus strobus*	63	100	Y	FACU
Shrub	Speckled Alder	*Vaccininum corymbosum*	85	60	Y	FACW+*
	Shagbark Hickory	*Carya ovata*	10.5	7	N	
	Flowering Dogwood	*Cornus florida*	10.5	7	N	
	Black Cherry	*Prunus Serotina*	38	28	Y	FACU
Herbs	Highbush Blueberry	*Vaccinium corybosum*	20.5	25	Y	FACW*
	Starflower	*Trientalis borealis*	10.5	13	Y	FAC*
	Poison Ivy	*Toxicodendron radicans*	10.5	13	Y	FAC*
	Flowering Dogwood	*Cornus florida*	10.5	13	Y	FACU-
	Wild Geranium	*Geranium maculatum*	10.5	13	Y	FACU
	Cinnamon Fern	*Osmunda cinnamomea*	20.5	25	Y	FACW*

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation Conclusion

Number of dominant wetland indicator plants: **5**	Number of dominant non-wetland indicator plants: **6**
Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? **Yes**	
Percent of dominant wetland plants vs. non-wetland plants: **45%**	

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Section II. Soil Information

Soil Survey

Is there a published soil survey for this site? **Yes**	Sketch:
Title/date: **NRCS Web Soil Survey 2.0**	
Map number:	
Soil type mapped: **Windsor loamy sand (11A)**	
Hydric soil inclusions:	
Are field observations consistent with soil survey? **Yes**	

Soil Profile Description

Soil Horizon	Depth - Inches	Color	Soil Texture	Soil Mottling	Comments
Oi	0-1	10YR 3/1			
A	1-5	7.5YR 3/3	Sandy loam		
B1	5-10	10YR 5/6	Fine sandy loam		
B2	10-20	10YR 6/6	Very fine sandy loam		

Hydric Soil Indicators: check all that apply and describe

- ☐ Histosol:
- ☐ Histic Epipedon:
- ☐ Sulfidic Odor:
- ☐ Aquic Moisture Regime:
- ☐ Reducing Conditions:
- ☐ Concretions:
- ☐ High Organic Content in Surface Layer of Sandy Soils:
- ☐ Listed on Local Hydric Soils List:
- ☐ Listed on National Hydric soils List :
- ☐ Other:

Remarks: None

Mottles: c = common, ma= many, m = medium, co = coarse, d = distinct, p = prominent

Section III. Hydrology

Indicators of Hydrology: check all that apply and describe

- ☐ Site inundated:
- ☐ Depth to free water in observation hole:
- ☐ Depth to soil saturation in observation hole:
- ☐ Water marks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

☐	Drift lines:				
☐	Sediment deposits:				
☐	Drainage patterns in Wetland:				
☐	Oxidized rhizospheres:				
☐	Water-stained leaves:				
☐	Recorded data (stream, lake or tidal gauge; aerial photo; other):				
☐	Other:				
Vegetation and Hydrology Conclusion					
Number of wetland indicator plants ≥ number of non-wetland indicator plants?		yes	☐	no	☒
Hydric soil present?		yes	☐	no	☒
Other indicators of hydrology present?		yes	☐	no	☒
Sample location is in a Wetland?		yes	☐	no	☒
Section IV. Atypical Situations					
Vegetation					
Type of Alteration:					
Effect on Vegetation:					
Previous Vegetation:					
Soils					
Type of Alteration:					
Effects on Soils:					
Previous Soils:					
Hydrology					
Type of Alteration:					
Effects on Hydrology:					
Previous Hydrology:					

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Determination Manual)

Applicant / Owner: **Tennessee Gas Pipeline Company (Tennessee)**		Plot ID: **Wetland 1**	
Project / Site: **Concord Expansion Project – Off Industrial Park Road**		Transect ID: **WF A-42**	
County: **Hillsborough**	State: **New Hampshire**	Community ID: **Wetland**	
Investigator: **John Zimmer (ENSR)**		Date of Delineation: **07/11/07**	
Do normal circumstances exist onsite?		Yes ☒	No ☐
Is the site significantly disturbed (Atypical situation)?		Yes ☐	No ☒
Is the site a potential problem area?		Yes ☐	No ☒

Check all that apply:

- ☐ Vegetation alone presumed adequate to delineate BVW: fill out Section I only
- ☒ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
- ☐ Method other than dominance test used (attach additional information)

Section I. Vegetation

Strata	Plant Species	Scientific Name	Percent Cover	Percent Dominance	Dominant Plant?	Wetland Indictor Category*
Trees	White Pine	*Pinus strobus*	3	6.8	N	FACU
	*Red Maple	*Acer rubrum*	38	86.3	Y	FAC
	*American Elm	*Ulmus americana*	3	6.8	N	FACW-
Sapling	Red Oak	Quercus rubra	38	50	Y	FACU-
	Black Cherry	*Prunus serotina*	38	50	Y	FACU
Shrub	*Speckled Alder	*Alnus rugosa*	63	60.6	Y	FACW+
	Flowering Dogwood	*Cornus florida*	20.5	19.7	N	FACU-
	*Northern Arrow-wood	*Viburnum recognitum*	20.5	19.7	N	FACW-
Herbs	*Cinnamon Fern	*Osmunda cinnamomea*	38	32.3	Y	FACW
	*Meadow Rue	*Thalictrum dioicum*	10.5	8.9	N	FAC
	*Marsh Fern	*Thelypteris simulate*	38	32.3	Y	FACW
	*Sensitive Fern	*Onoclea sensibilis*	20.5	17.4	N	FACW
	*Deer Tongue	*Dichanthelium cladestinum*	10.5	8.9	N	FAC+

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation Conclusion

Number of dominant wetland indicator plants: **4**	Number of dominant non-wetland indicator plants: **2**
Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? **Yes**	
Percent of dominant wetland plants vs. non-wetland plants: **83%**	

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Section II. Soil Information

Soil Survey

Is there a published soil survey for this site? **Yes**

Title/date: **Web Soil Survey Data for Hillsborough County, NH; Eastern Part and Rockingham County, NH [Accessed 2007]**

Map number: **NA**

Soil type mapped: **Windsor loamy sand ("WdC"), Pootatuck fine sandy loam ("Pu") and Hinckley loamy sand ("HsB")**

Hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? **Yes**

Sketch:

Soil Profile Description

Soil Horizon	Depth - Inches	Color	Soil Texture	Soil Mottling	Comments
Oi	0-5	10YR 2/1	Fibrus	NA	Leaves/roots
A1	6-16	7.5YR 2.5/1	Silty Loam	NA	Some roots
A2	16-20+	10YR 2/1	Silty Loam	2.5Y 7/2	mmd

Hydric Soil Indicators: check all that apply and describe

- ☐ Histosol:
- ☐ Histic Epipedon:
- ☐ Sulfidic Odor:
- ☐ Aquic Moisture Regime:
- ☐ Reducing Conditions:
- ☐ Concretions:
- ☐ High Organic Content in Surface Layer of Sandy Soils:
- ☐ Listed on Local Hydric Soils List:
- ☐ Listed on National Hydric soils List :
- ☐ Other:

Remarks: None

Mottles: c = common, ma= many, m = medium, co = coarse, d = distinct, p = prominent

Section III. Hydrology

Indicators of Hydrology: check all that apply and describe

- ☐ Site inundated:
- ☒ Depth to free water in observation hole: 20+ inches
- ☒ Depth to soil saturation in observation hole: 10 inches

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☒	Water marks:	
☐	Drift lines:	
☐	Sediment deposits:	
☐	Drainage patterns in Wetland:	
☒	Oxidized rhizospheres:	
☒	Water-stained leaves:	
☒	Recorded data (stream, lake or tidal gauge; aerial photo; other):	Beaver Brook
☐	Other:	

Vegetation and Hydrology Conclusion				
Number of wetland indicator plants ≥ number of non-wetland indicator plants?	yes	☒	no	☒
Hydric soil present?	yes	☒	no	☒
Other indicators of hydrology present?	yes	☒	no	☒
Sample location is in a Wetland?	yes	☒	no	☒

Section IV. Atypical Situations
Vegetation
Type of Alteration:
Effect on Vegetation:
Previous Vegetation:
Soils
Type of Alteration:
Effects on Soils:
Previous Soils:
Hydrology
Type of Alteration:
Effects on Hydrology:
Previous Hydrology:

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Applicant / Owner: **Tennessee Gas Pipeline Company (Tennessee)**		Plot ID: **Wetland A**	
Project / Site: **Concord Expansion Project – Laconia Meter Station**		Transect ID: **WF A-9**	
County: **Merrimack**	State: **New Hampshire**	Community ID: **Upland**	
Investigator: **John Zimmer (ENSR)**		Date of Delineation: **01/10/08**	
Do normal circumstances exist onsite?		Yes ☒	No ☐
Is the site significantly disturbed (Atypical situation)?		Yes ☐	No ☒
Is the site a potential problem area?		Yes ☐	No ☒

Check all that apply:

- ☐ Vegetation alone presumed adequate to delineate BVW: fill out Section I only
- ☒ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
- ☐ Method other than dominance test used (attach additional information)

Section I. Vegetation

Strata	Plant Species	Scientific Name	Percent Cover	Percent Dominance	Dominant Plant?	Wetland Indictor Category*
Trees	White Pine	*Pinus strobus*	85.5	100	Y	FACU
Sapling	White Pine	*Pinus strobus*	38	64	Y	FACU
	Eastern Hemlock	*Tsuga canadensis*	20.5	35	Y	FACU
Shrub	Black Cherry	*Prunus serotina*	20.5	50	Y	FACU
	White Pine	*Pinus strobus*	20.5	50	Y	FACU

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation Conclusion

Number of dominant wetland indicator plants: **0**	Number of dominant non-wetland indicator plants: **5**
Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? **No**	
Percent of dominant wetland plants vs. non-wetland plants: **0%**	

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Section II. Soil Information

Soil Survey

Is there a published soil survey for this site? **Yes**	Sketch:
Title/date: **NRCS Web Soil Survey 2.0**	
Map number:	
Soil type mapped: **Suncook loamy fine sandy (2A)**	
Hydric soil inclusions:	
Are field observations consistent with soil survey? **No**	

Soil Profile Description

Soil Horizon	Depth - Inches	Color	Soil Texture	Soil Mottling	Comments
A	0 – 6	2.5YR 5/1	Silty loam		
B1	6-14	10YR 6/4	Sandy loam		
B2	14-24	10YR 5/6	Sandy loam		

Hydric Soil Indicators: check all that apply and describe

- ☐ Histosol:
- ☐ Histic Epipedon:
- ☐ Sulfidic Odor:
- ☐ Aquic Moisture Regime:
- ☐ Reducing Conditions:
- ☐ Concretions:
- ☐ High Organic Content in Surface Layer of Sandy Soils:
- ☐ Listed on Local Hydric Soils List:
- ☐ Listed on National Hydric soils List :
- ☐ Other:

Remarks: None

Mottles: c = common, ma= many, m = medium, co = coarse, d = distinct, p = prominent

Section III. Hydrology

Indicators of Hydrology: check all that apply and describe

- ☐ Site inundated:
- ☐ Depth to free water in observation hole:
- ☐ Depth to soil saturation in observation hole: 6 inches – delineation following snowmelt
- ☐ Water marks:
- ☐ Drift lines:

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☐	Sediment deposits:
☐	Drainage patterns in Wetland:
☐	Oxidized rhizospheres:
☐	Water-stained leaves:
☐	Recorded data (stream, lake or tidal gauge; aerial photo; other):
☐	Other:

Vegetation and Hydrology Conclusion				
Number of wetland indicator plants ≥ number of non-wetland indicator plants?	yes	☐	no	☒
Hydric soil present?	yes	☐	no	☒
Other indicators of hydrology present?	yes	☐	no	☒
Sample location is in a Wetland?	yes	☐	no	☒

Section IV. Atypical Situations
Vegetation
Type of Alteration:
Effect on Vegetation:
Previous Vegetation:
Soils
Type of Alteration:
Effects on Soils:
Previous Soils:
Hydrology
Type of Alteration:
Effects on Hydrology:
Previous Hydrology:

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Applicant / Owner: **Tennessee Gas Pipeline Company (Tennessee)**		Plot ID: **Wetland A**	
Project / Site: **Concord Expansion Project – Off Broken Bridge Road**		Transect ID: **WF A-9**	
County: **Merrimack**	State: **New Hampshire**	Community ID: **Wetland**	
Investigator: **John Zimmer (ENSR)**		Date of Delineation: **01/10/08**	
Do normal circumstances exist onsite?		Yes ☒	No ☐
Is the site significantly disturbed (Atypical situation)?		Yes ☐	No ☒
Is the site a potential problem area?		Yes ☐	No ☒

Check all that apply:

- ☐ Vegetation alone presumed adequate to delineate BVW: fill out Section I only
- ☒ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
- ☐ Method other than dominance test used (attach additional information)

Section I. Vegetation

Strata	Plant Species	Scientific Name	Percent Cover	Percent Dominance	Dominant Plant?	Wetland Indictor Category*
Trees	Red Maple	*Acer rubrum*	63	75	Y	FAC*
	White Pine	*Pinus strobus*	20.5	26	Y	FACU
Sapling	Red Maple	*Acer rubrum*	20.5	66	Y	FAC*
	Eastern Hemlock	*Tsuga canadensis*	10.5	34	Y	FACU
Shrub	Red Maple	*Acer rubrum*	38	100	Y	FAC*

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation Conclusion

Number of dominant wetland indicator plants: **3**	Number of dominant non-wetland indicator plants: **2**
Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? **Yes**	
Percent of dominant wetland plants vs. non-wetland plants: **60%**	

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Section II. Soil Information	
Soil Survey	
Is there a published soil survey for this site? **Yes**	Sketch:
Title/date: **NRCS Web Soil Survey 2.0**	
Map number:	
Soil type mapped: **Suncook loamy fine sandy (2A)**	
Hydric soil inclusions:	
Are field observations consistent with soil survey? **Yes**	

Soil Profile Description

Soil Horizon	Depth - Inches	Color	Soil Texture	Soil Mottling	Comments
A	0-11	10YR 7/2	Silty loam		
Bw1	11-17	10YR 3/2	Sandy loam	7.5YR 5/4	
Bw2	17+	10YR 4/2	Sandy loam	10YR 5/6	

Hydric Soil Indicators: check all that apply and describe

- ☐ Histosol:
- ☐ Histic Epipedon:
- ☐ Sulfidic Odor:
- ☐ Aquic Moisture Regime:
- ☐ Reducing Conditions:
- ☐ Concretions:
- ☐ High Organic Content in Surface Layer of Sandy Soils:
- ☐ Listed on Local Hydric Soils List:
- ☐ Listed on National Hydric soils List :
- ☐ Other:

Remarks: None

Mottles: c = common, ma= many, m = medium, co = coarse, d = distinct, p = prominent

Section III. Hydrology

Indicators of Hydrology: check all that apply and describe

- ☐ Site inundated:
- ☒ Depth to free water in observation hole: 11 Inches
- ☒ Depth to soil saturation in observation hole: Surface
- ☐ Water marks:
- ☐ Drift lines:

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☐	Sediment deposits:
☐	Drainage patterns in Wetland:
☐	Oxidized rhizospheres:
☒	Water-stained leaves:
☐	Recorded data (stream, lake or tidal gauge; aerial photo; other):
☐	Other:

Vegetation and Hydrology Conclusion				
Number of wetland indicator plants ≥ number of non-wetland indicator plants?	yes	☒	no	☐
Hydric soil present?	yes	☒	no	☐
Other indicators of hydrology present?	yes	☒	no	☐
Sample location is in a Wetland?	yes	☒	no	☐

Section IV. Atypical Situations
Vegetation
Type of Alteration:
Effect on Vegetation:
Previous Vegetation:
Soils
Type of Alteration:
Effects on Soils:
Previous Soils:
Hydrology
Type of Alteration:
Effects on Hydrology:
Previous Hydrology:

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Applicant / Owner: **Tennessee Gas Pipeline Company (Tennessee)**		Plot ID: **Wetland B**	
Project / Site: **Concord Expansion Project – Laconia Meter Station**		Transect ID: **WF B-3**	
County: **Merrimack**	State: **New Hampshire**	Community ID: **Upland**	
Investigator: **John Zimmer (ENSR)**		Date of Delineation: **01/10/08**	
Do normal circumstances exist onsite?		Yes ☒	No ☐
Is the site significantly disturbed (Atypical situation)?		Yes ☐	No ☒
Is the site a potential problem area?		Yes ☐	No ☒

Check all that apply:

- ☐ Vegetation alone presumed adequate to delineate BVW: fill out Section I only
- ☒ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
- ☐ Method other than dominance test used (attach additional information)

Section I. Vegetation

Strata	Plant Species	Scientific Name	Percent Cover	Percent Dominance	Dominant Plant?	Wetland Indictor Category*
Trees	White Pine	*Pinus strobus*	63	62	Y	FACU
	Black Cherry	*Prunus serotina*	38	38	Y	FACU
Sapling	White Pine	*Pinus strobus*	38	65	Y	FACU
	Black Cherry	*Prunus serotina*	20.5	35	Y	FACU
Shrub	Silky Dogwood	*Cornus amomum*	10.5	34	Y	FACW*
	White Pine	*Pinus strobus*	20.5	66	Y	FACU

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation Conclusion

Number of dominant wetland indicator plants: **1**	Number of dominant non-wetland indicator plants: **5**
Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? **No**	
Percent of dominant wetland plants vs. non-wetland plants: **17%**	

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Section II. Soil Information	
Soil Survey	
Is there a published soil survey for this site? **Yes**	Sketch:
Title/date: **NRCS Web Soil Survey 2.0**	
Map number:	
Soil type mapped: **Suncook loamy fine sandy (2A)**	
Hydric soil inclusions:	
Are field observations consistent with soil survey? **No**	

Soil Profile Description

Soil Horizon	Depth - Inches	Color	Soil Texture	Soil Mottling	Comments
A	0-5	10YR 7/2	Loamy Sand		
B1	5-16	10YR 4/6	Sandy loam		
B2	16+	10YR 5/8	Sandy loam		

Hydric Soil Indicators: check all that apply and describe

☐	Histosol:
☐	Histic Epipedon:
☐	Sulfidic Odor:
☐	Aquic Moisture Regime:
☐	Reducing Conditions:
☐	Concretions:
☐	High Organic Content in Surface Layer of Sandy Soils:
☐	Listed on Local Hydric Soils List:
☐	Listed on National Hydric soils List :
☐	Other:

Remarks: None

Mottles: c = common, ma= many, m = medium, co = coarse, d = distinct, p = prominent

Section III. Hydrology

Indicators of Hydrology: check all that apply and describe

☐	Site inundated:
☐	Depth to free water in observation hole:
☐	Depth to soil saturation in observation hole:
☐	Water marks:
☐	Drift lines:

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☐	Sediment deposits:
☐	Drainage patterns in Wetland:
☐	Oxidized rhizospheres:
☐	Water-stained leaves:
☐	Recorded data (stream, lake or tidal gauge; aerial photo; other):
☐	Other:

Vegetation and Hydrology Conclusion				
Number of wetland indicator plants ≥ number of non-wetland indicator plants?	yes	☐	no	☒
Hydric soil present?	yes	☐	no	☒
Other indicators of hydrology present?	yes	☐	no	☒
Sample location is in a Wetland?	yes	☐	no	☒

Section IV. Atypical Situations
Vegetation
Type of Alteration:
Effect on Vegetation:
Previous Vegetation:
Soils
Type of Alteration:
Effects on Soils:
Previous Soils:
Hydrology
Type of Alteration:
Effects on Hydrology:
Previous Hydrology:

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Applicant / Owner: **Tennessee Gas Pipeline Company (Tennessee)**		Plot ID: **Wetland B**	
Project / Site: **Concord Expansion Project – Laconia Meter Station**		Transect ID: **WF B-3**	
County: **Merrimack**	State: **New Hampshire**	Community ID: **Wetland**	
Investigator: **John Zimmer (ENSR)**		Date of Delineation: **01/10/08**	
Do normal circumstances exist onsite?		Yes ☒	No ☐
Is the site significantly disturbed (Atypical situation)?		Yes ☐	No ☒
Is the site a potential problem area?		Yes ☐	No ☒

Check all that apply:

- ☐ Vegetation alone presumed adequate to delineate BVW: fill out Section I only
- ☒ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
- ☐ Method other than dominance test used (attach additional information)

Section I. Vegetation

Strata	Plant Species	Scientific Name	Percent Cover	Percent Dominance	Dominant Plant?	Wetland Indictor Category*
Sapling	Red Maple	*Acer rubrum*	85.5	100	Y	FAC*
Shrub	White Pine	*Pinus strobus*	10.5	33	Y	FACU
	Northern Arrowwood	*Viburnum recognitum*	20.5	66	Y	FACW-*

* *Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c.131, s.40); plants in the genus Sphagnum; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.*

Vegetation Conclusion

Number of dominant wetland indicator plants: **2**	Number of dominant non-wetland indicator plants: **1**
Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? **Yes**	
Percent of dominant wetland plants vs. non-wetland plants: **67%**	

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Section II. Soil Information

Soil Survey

Is there a published soil survey for this site? **Yes**	Sketch:
Title/date: **NRCS Web Soil Survey 2.0**	
Map number:	
Soil type mapped: **Suncook loamy fine sandy (2A)**	
Hydric soil inclusions:	
Are field observations consistent with soil survey? **Yes**	

Soil Profile Description

Soil Horizon	Depth - Inches	Color	Soil Texture	Soil Mottling	Comments
A	0-13	7.5YR 2.5/1	Silty loam		
B1	13-21	10YR 4/2	Silty loam	10YR 5/4	

Hydric Soil Indicators: check all that apply and describe

- ☐ Histosol:
- ☐ Histic Epipedon:
- ☐ Sulfidic Odor:
- ☐ Aquic Moisture Regime:
- ☐ Reducing Conditions:
- ☐ Concretions:
- ☐ High Organic Content in Surface Layer of Sandy Soils:
- ☐ Listed on Local Hydric Soils List:
- ☐ Listed on National Hydric soils List :
- ☐ Other:

Remarks: None

Mottles: c = common, ma= many, m = medium, co = coarse, d = distinct, p = prominent

Section III. Hydrology

Indicators of Hydrology: check all that apply and describe

- ☐ Site inundated:
- ☒ Depth to free water in observation hole: 9 inches
- ☒ Depth to soil saturation in observation hole: Surface
- ☐ Water marks:
- ☐ Drift lines:
- ☐ Sediment deposits:

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☐	Drainage patterns in Wetland:
☐	Oxidized rhizospheres:
☐	Water-stained leaves:
☐	Recorded data (stream, lake or tidal gauge; aerial photo; other):
☐	Other:

Vegetation and Hydrology Conclusion				
Number of wetland indicator plants ≥ number of non-wetland indicator plants?	yes	☒	no	☐
Hydric soil present?	yes	☒	no	☐
Other indicators of hydrology present?	yes	☒	no	☐
Sample location is in a Wetland?	yes	☒	no	☐

Section IV. Atypical Situations
Vegetation
Type of Alteration:
Effect on Vegetation:
Previous Vegetation:
Soils
Type of Alteration:
Effects on Soils:
Previous Soils:
Hydrology
Type of Alteration:
Effects on Hydrology:
Previous Hydrology: